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TECHNICAL BULLETIN

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Inside this issue:

2005 Project Awards	1
Culvert Liner Criteria	2
Guidance on "Incentive Density HMA Pavements	3
WB-62 Design Vehicle for Autoturn	3
Design Procedures for Asbestos in Bridges	4-5
Structure Survey Report Forms and Structure	6

2005 Project Awards

The time has come to consider projects for the 2005 Excellence in Design Awards. The deadline for the 2004 Construction Awards has past. Construction Administration is coordinating with D2's Project Development Section for eligible projects.

Design Awards

Categories for the Design Awards are the same as last year. Consultant or municipal designed projects will need approval by the District prior to submitting any nominations. These categories are as follows:

- Best Bridge by WisDOT
- Best Bridge by Consultant or Municipality
- Best Urban Project by WisDOT
- Best Urban Project by Consultant or Municipality
- Best Rural Project by WisDOT
- Best Rural Project by Consultant or Municipality




Last years "Best Bridge by WisDOT" winner.

Projects Constructed in 2003 and 2004 would be eligible for the 2005 awards. Designers wishing to nominate a project for an award need to contact Scott Ahles at (262) 548-6894, scott.ahles@dot.state.wi.us, for the nomination screening documents. Screening Documents from WisDOT, consultant and municipal designers should be submitted to:

Scott Ahles, P.E.
Project Development Engineer
Wisconsin Department of Transportation, District 2
141 NW Barstow Street
P.O. Box 798
Waukesha, WI 53187-0798

Screening documents must be received by November 19, 2004. District 2 will evaluate all projects and select one project from each category for consideration at the statewide level. District 2 will provide the statewide nomination packets to the selected project's designers. Designers will need to develop and return the statewide nomination packets to Scott Ahles at the address shown above by January 5, 2005.



- Screening documents available from District 2.
- Return screening documents to District 2 by November 19, 2004.
- Statewide candidates selected by District 2.
- Statewide documents due in District 2 by January 5, 2005.

Culvert Liner Criteria

DATE: September 1, 2004
 TO: District Staff
 FROM: Beth Canestra
 Chief Roadway Development Engineer
 SUBJECT: Proper use of pipe liners

Over a year ago, the Department stopped specifying pipe liners as a size in relation to the original pipe. The specifications now call for a minimum percent of full flow capacity of the original pipe and require a third party certification of the Manning's "n" value that is used to calculate this flow capacity. Unfortunately, many staff are not familiar with this new specification (STSP 520-015), are not performing the necessary calculations and are not ensuring that a third party certification has been obtained prior to installation of the liner.

To best enable contractors to bid on this item of work, project staff should calculate the full flow capacity of the pipe that is to be lined. **This value needs to be shown on the plan.** This value shall be shown on the miscellaneous quantities sheet and listed as the "original full flow capacity". To compute this capacity, the designer must know the size and type of existing pipe (CMCP, RCCP, spiral rib etc). To calculate the original full flow capacity, designers should assume inlet control and utilize the following equation:

$$Q = \frac{0.46}{n} D^{2.67} S^{0.5}$$

Where **Q = flow capacity in ft³/sec**

D = inside diameter of pipe in feet

S = slope of pipe ft/ft

n = Manning's "n" factor; coefficient of roughness

The following "n" factors will be assumed:

Existing concrete pipe: n = 0.013

Existing corrugated-metal (non-helical)
 or pipe arch (riveted) n = 0.024

Existing steel spiral rib pipe: n = 0.013

Existing CMCP helical (2-2/3"x 1/2" corrugations):

18" n = 0.013

24" n = 0.015

30" n = 0.017

36" n = 0.018

42" n = 0.020

54" and larger n = 0.022

If desired, to convert from cfs to gpm, multiply by 448.81 .



Culvert liner.

Once contractors have this value, they can select an appropriately sized liner to meet at least 95% of the original full flow capacity. **Project staff should check the contractor's computations using the same equation defined above.** The Manning's "n" factor utilized in this computation will be the value which has been certified to the department and which is shown on the "Approved Product's List" available through the following link: http://mad41fp1\4public\Quality\Web\APPROVED_LISTS\Approved_lists_2004.pdf (reference Pipe Liners Manning's Coefficient Certification). If a manufacturer is not included on this list, they do not have the appropriate certification and the pipe liner shall not be installed (there are tests in addition to this certification that are also required). Currently there is only one manufacturer on this list and another is attempting to obtain certification. If projects let with the new STSP have liners installed that do not have a certified Manning's Coefficient, staff should consider taking a credit for the liner. This is a fairly expensive certification for suppliers to obtain because only accredited hydraulics labs have the capability to conduct the testing.

Please retain this memo as a reference for appropriate use of culvert pipe liners. In the future, this guidance will be incorporated into the FDM.

This guidance should also be used when pipes are being lined through maintenance operations.

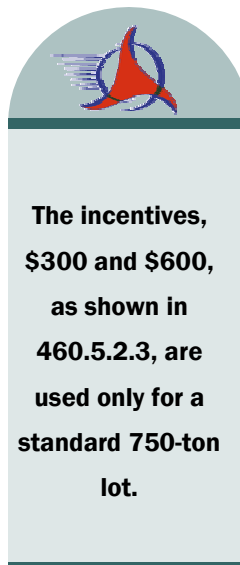
Guidance on “Incentive Density HMA Pavements”

The Engineer’s Estimate for Bid Item 460.2000, Incentive Density HMA Pavements, is only a rough estimate and there is no telling what the actual cost will be until all the HMA mix testing and nuclear density testing is completed. The estimate is based on the following, $(\text{Total HMA Quantity} \div 750 \text{ tons}) \times \$600 \times 80\%$. Where \$600 is the maximum incentive value allowable per a 750-ton lot, reference 460.5.2.3, and 80% is an assumption as to the percentage of lots, which will be eligible of an incentive.

To receive the incentive based on 460.5.2.3, not only does the average density of the lot have to fall within the “Percent Lot Density Above Specified Minimum” ranges, the lowest air void test(s) representing either the day the lot was started or finished needs to meet the air void criteria of 460.5.2.3(1), which means the air void result is within 3.5% to 5.0%.

The criteria above have been topics presented at the yearly Materials Training. The next topic has not been fully covered in the training and may not be being addressed correctly on our projects. The incentives, \$300 and \$600, as shown in 460.5.2.3, are used only for a standard 750-ton lot. If the lot quantity is anything other than 750 tons the appropriate incentive value needs to be prorated to the actual lot size. Therefore, a 500-ton lot with an average density between 1.1 and 1.8 inclusive should receive an incentive of \$200, not \$300. Similarly, a 1000-ton lot with an average density greater than 1.8 should receive an incentive of \$800, not \$600. For further clarification on prorating incentives for the bid item “Incentive for HMA Pavement Density”, please contact Todd Peschke at (262) 548-5696 or the Asphalt Unit at (262) 524-0684.

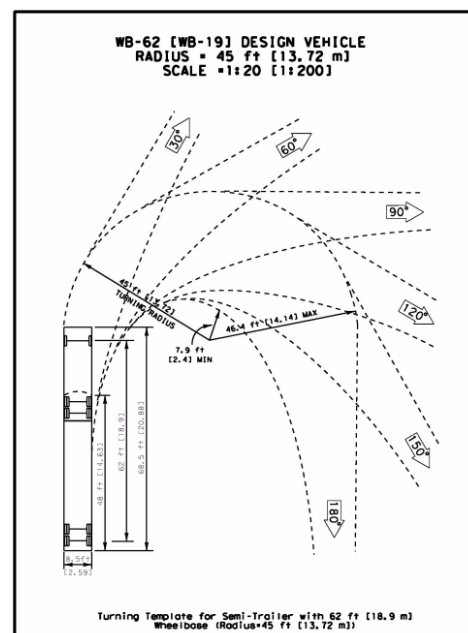
Remember to notify the Asphalt Unit to arrange a prepave meeting and set up a schedule for density testing.



WB-62 Design Vehicle for Autoturn

When using Autoturn to evaluate turning movements at intersections, designers need to be aware of the limits for the maximum length of the semi-trailer for a WB-62. State statute 348.07(2)(gr) states that a semi-trailer can be up to 53 feet in length as long as the distance from the kingpin of the semi-tractor to the axle does not exceed 43 feet.

The AASHTO default value in Autoturn is 42 feet. The one foot difference is not critical but designers should check the 43 feet value when designing intersections where turning movements are tight and there is limited room for expanding the intersection.



Design Procedures for Asbestos in Bridges

Designers need to be aware of asbestos issues on projects involving bridge work. Asbestos can be found on various parts of the bridge. The caulk material used to seal the ends of expansion joints, the caulk used in the parapet walls, the tarpaper-like material used between the wing walls and the abutment and the grout used under guardrail bolt plates are some of the materials that have tested positive for asbestos on projects within the past year. Asbestos can also be found in the tender houses on lift bridges, and in the insulation or piping for utilities that may be buried in or carried under the structure. All projects with bridges will be required to have an asbestos inspection done.

For projects with bridges that have PS&E dates before the end of the year and that have not yet been inspected for asbestos, project managers need to contact the Bureau of Equity and Environmental Services (BEES) at (608) 266-1476 for an inspection. Inspections will be completed through contracting in Central Office.

For projects that are currently in Design, but have completed the environmental document and not had an asbestos inspection done, please contact BEES to schedule an inspection.

For projects that are at the beginning stages, the Scoping Checklist has an area in the Design Worksheet under “Additional Contracts needed” for asbestos testing/removal. The method of contracting for future asbestos inspection has not been finalized, but will appear in future FDM revisions, probably January 2005.

Inspection protocol, reporting, sampling and abatement requirements will also be included in the upcoming FDM revisions. Additional updates will be made to the Construction and Materials Manual, the Bridge Inspection Manual, the Utility Accommodations Policy and the Safety Manual.



Tarpaper-like material between wingwall.



Tarpaper-like material on a timber support.

Inspection Timing

The asbestos inspection should be done at the same time as the Phase 1 Hazardous Materials Assessment. **Even if your bridge project does not require a Phase 1 it will require an asbestos inspection.**

There are three different special provisions for asbestos, which may need inclusion in the project special provision depending on the findings of the inspections.

- 1) For any project where no asbestos or no regulated asbestos was identified in the asbestos inspection report, use STSP 107-125.
- 2) For any project where asbestos was identified in the asbestos inspection report, but the project plans do not require disturbance of the asbestos, use STSP 107-120. The designer will need to carefully consider the construction practices for these projects. For example – if asbestos is present in the grout under the bolt plates, it will require abatement if the railing is removed to facilitate installation of the rails for the decking machine. In this case, instead of STSP 107-120, you would use bid item 203.0210.S Abatement of Asbestos Containing Material (Structure) and STSP 203-005. This is a lump sum bid item and the bid price will vary based on the type of work on the bridge and the extent of the asbestos requiring abatement.
- 3) For any project where asbestos has been identified and will be disturbed, use bid item 203.0210.S Abatement of Asbestos Containing Material (Structure) in the contract and STSP 203-005 in the specials.

Coordination is ongoing to identify any projects with bridges that have not yet been inspected that are close to or past the PS&E date, including those past the let date. Central office plan and design checkers will be flagging any bridge projects that do not contain an asbestos special provision. If you believe that one of your bridge projects may not have been inspected, please contact Sharlene Te Beest, Hazardous Materials Specialist, Bureau of Equity and Environmental Services (BEES) at (608) 266-1476, sharlene.tebeest@dot.state.wi.us, or Ken Wade, District Hazardous Materials Engineer at (262) 548-6733, kenneth.wade@dot.state.wi.us.

Design Procedures for Asbestos in Bridges (cont.)

Action Summary:

Project Type:	Asbestos present on the structure	No asbestos on the structure
Demolition	STSP 203-005 and bid item 203.0210S	STSP 107-125
Rehabilitation - No asbestos	---	STSP 107-125
Rehabilitation – Asbestos on structure will be disturbed	STSP 203-005 and bid item 203.0210S	---
Rehabilitation - Asbestos not to be disturbed	STSP 107-120	---



Grout under guardrail bearing plate.



Caulk in sidewall expansion joint.

<i>Project Status</i>	No Asbestos inspection completed	Asbestos inspection completed
Let but not yet constructed	Contact BEES for inspection	If no asbestos STSP was included, Construction Engineer needs to notify BEES -10 days prior to start of construction.
PS&E Already submitted	Contact BEES for inspection and determination of which STSP to use.	CO Plan and Design checkers will check for an Asbestos STSP.
PS&E due between 10/1/04 and 3/31/05	Contact BEES for inspection.	Designer inserts the proper STSP and, if necessary, bid item.
Project currently in design, PS&E due after 3/31/05	Contract for inspection following FDM procedures. (Expected release January, 2005)	Designer inserts the proper STSP and, if necessary, bid item.
Project in Scoping	Contract for inspection following FDM procedures. (Expected release January, 2005)	Designer inserts the proper STSP and, if necessary, bid item.

Structure Survey Report Forms and Structure

FDM chapter 3-20-30 states:

The Structure Survey Report contains all data necessary to design a structure. It is prepared and submitted by the district or their consultant.

To insure that all required information is included in the Structure Survey Report, several standard forms have been created for specific situations.

DT 1694 Separation Structure Survey

DT 1696 Rehabilitation Structure Survey

DT 1698 Stream Crossing/Box Culvert Structure Survey

WisDOT staff can click on the link in the online FDM to access electronic copies of these forms and checklists, or thru the dotnet at http://dotnet/dtid_bos/structdesign/index.htm.

Consultants can access electronic copies of these forms and checklists by clicking on the link in the online FDM or through the Consultant Extranet at https://trust.dot.state.wi.us/extntgtwy/dtid_bos/extranet/structures/reports-checklists.htm. Look under "Plans and projects."

One of the requirements for submitting a Structure Survey Report is a structure number. To have a structure number assigned, WisDOT staff can contact Scott Ahles or Bob Roszkowski in District 2 Design Services. Consultants should request the structure numbers through the WisDOT Project Manager.

To request a bridge number, designers should fill out the Bridge Number Request Form located at *n:\pds\forms\prelengr\bridge number request.doc*. For box culverts, use the Box Culvert Request Form located in the same directory. WisDOT staff can forward the forms to consultants on consultant designed structures prior to submitting to Design Services. Currently no forms exist for retaining wall numbers or noise barrier numbers. WisDOT staff should coordinate with Design Services when numbers are needed for these structures.

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